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ABSTRACT

To extend the opportunity for increasing the management efficiency of North Dakota farmers, this program for aiding farm managers and operators was undertaken in July 1971. Objectives, activities, current status of the program, summary, and conclusions are outlined here. Objectives included designing and implementing a records system, providing technical assistance to teachers conducting local programs, and establishing a data bank of information concerning annual farm records in North Dakota. A flow chart of activities, preservice and inservice education for agriculture teachers, and the responsibilities of a State coordinator are outlined. In November 1973, nine schools in the State were conducting programs and estimates for 1974 enrollment indicate a substantial expansion. (MU)

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RESEARCH SERIES NO. 5

FARM MANAGEMENT EDUCATION RECORD ANALYSIS SYSTEMS RESEARCH AND DEVELOPMENT PROJECT

NORTH DAKOTA
RESEARCH COORDINATING UNIT
STATE BOARD FOR VOCATIONAL EDUCATION
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FINAL REPORT

FARM MANAGEMENT EDUCATION RECORD ANALYSIS SYSTEMS RESEARCH AND DEVELOPMENT PROJECT

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Department of Agricultural Education
North Dakota State University
Of Agriculture and Applied Science
Fargo, North Dakota

November, 1973

in cooperation with

NORTH DAKOTA STATE BOARD

FOR VOCATIONAL AND TECHNICAL EDUCATION

Bismarck, North Dakota

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INTRODUCTION

> "The useful parts of wealth getting are, first, the knowledge of livestock--which are most profitable and where and how--as for example, what sort of horses or oxen or any other animals are most likely to give a return. A man ought to know which of these pay better than others, and which pay best in particular places, for some do better in one place and some in another."[1]

The concept of farm management is not new. Since man first began to till the soil and domesticate the beasts, he has been engaged in the business of management. While his management was not guided by the knowledge of technology which the Twentieth century farmer possesses, he nevertheless performed the essential features of management--decision making.

To be a successful decision maker, one must have at his command certain facts which bear upon his pending decision. As Aristotle wrote, "A man ought to know which of these pay better than others..." The steps in the decision process are more apt to lead toward a good business decision if the decision maker can

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1. Aristotle, Politics, Book I, Great Books Series.

fortify his intuition with facts drawn from the record of performance of the business. The decision making process can best be described as a series of organized steps as outlined below.[2]

1. Analyze the present situation.
2. Locate the problem
3. Set up objectives or goals.
4. Size up resources.
5. Look for various alternatives.
6. Consider probable consequences and outcome.
7. Evaluate the expected results.
8. Decide on a course of action.
9. Put the plan into effect.
10. Evaluate the outcome in relation to goals.

Most of the steps in the decision process rely upon the decision-maker's ability to objectively gather, assemble, analyze, and interpret information relative to his business. To accomplish these tasks it is necessary to have an orderly and systematic method of utilizing information which will be helpful in the decision making process.

The managers of the more than 40,000 farms in North Dakota represent a unique group for whom the process of decision making is an everyday occurrence.[3] Their task is augmented by the complexities of organization within their businesses and the vast and dynamic

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2. Palan, Ralph and Edgar Persons, A Course of Study for Adult Farmer Instruction in Farm Management and Farm Business Analysis, Third Edition, University of Minnesota, 1972.

3. Census of Agriculture, 1969, United States Department of Commerce, Bureau of the Census, Superintendent of Documents, Washington, D. C.

storehouse of technical information upon which they can draw to facilitate the production of food and fiber.

While the management task is in itself a formidable one, it is further complicated by the geography of the State. The typical low population density of the State, combined with the absence of organized associations to provide adequate and readily available management assistance, place the burden of learning how to be an effective manager squarely upon the shoulders of each individual manager. Thus, unless organized programs are provided to assist in learning the management function, each farm manager must be self educated in dealing with the complexities of the operation of his business.

NEED FOR MANAGEMENT INSTRUCTION

The farm manager need take an isolationist's view only if he chooses to ignore the potential in each community for providing organized instruction in farm management. Each community has already established an institutional framework of public education to serve the youth of the community. It is logical to assume that this well established network of public schools could serve as the basic organizational unit for expanding the responsibility of the schools to include the farm management education of the adult farm manager in the community.

That the need for educational opportunity is there, is evident. In spite of the large farm size of North Dakota farms, the net productivity of these farms is relatively limited. The average income (gross) from the sale of agricultural products was only $16, 146 per farm in 1969, the last date for which census data is available.[4] Based upon studies of gross business margins, it is estimated that the money available for family living from farm income would be less than $4,000 per farm for 1969.[5] Even though 1973 prices would produce a much higher income level, there is a strong need for improved and expanded management education for farmers and ranchers. This need is sharpened by sharply rising costs and rapidly changing conditions.

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4. Ibid

5. Nodland, Truman, Edgar Persons, Janet Oris, "Farm Business Summaries by Type of Farm, 1972," University of Minnesota, St. Paul.

With the earning potential evident by the large physical and human resources used in farm production, a program to extend the opportunity for increasing management efficiency through organized education programs is worthy of continued study, trial and evaluation.

Vocational Education is provided for many types of gainful employment, but very little is being provided at present for entrepreneurs, such as farm operators and managers. While the number of secondary and post-secondary youths served by Vocational Education in North Dakota is rapidly increasing, the number of adults being served is relatively small.

RELATED LITERATURE

Because interest in and study of farm management has existed for a long time, the literature dealing with the management process is very voluminous. However, it was not the primary intent of this project to add to the knowledge about management but rather to examine the feasibility of establishing and adapting a specific type of delivery system for farm management education.

With the latter purpose in mind, the literature is more confined. The principal activity in establishing management education as a model for adult instruction in agriculture occurred in Minnesota. While there have been many published reports of these activities, only those relevant to the current operation of management education programs have been selected for review.

Curriculum:

Palan and Persons developed a curriculum guide for farm management instruction which outlined the types of instruction for the first three years of management instruction.[6] This guide provides a series of twelve to fifteen units of instruction to be included in each of the three years. The general theme for the series of units in successive years is a) Farm Records and Accounts; b) Farm Business Record Analysis; and c) Farm Business Organization. Each teaching unit outlines the teacher objectives, subject content and suggested

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6. Palan, Ralph, and Edgar Persons, Course of Study... op cit.

on-farm instructional activities.

They also state that a farm management education program must meet five specific criteria:

1. There must be regular enrollees in each course
2. Specific units must be taught as part of each course.
3. There should be a regular and definite sequence of courses.
4. There must be continuity between courses with progress toward the most effective farm business organization and greatest operating efficiency which is consistent with family goals.
5. On-farm instruction is an integral part of the teaching plan.

Classroom instruction was augmented by Painter's contribution on keeping farm records.[7] He defines the kinds of records that must be kept to obtain a useful analysis and outlines procedures to follow in checking the information for accuracy.

Once information has been gathered and analyzed, Painter[8] outlines ways in which the information can be used in both classroom and individual instruction. By using actual farm data in his illustrations, he presents data in a way that can be easily understood by the farm family.

An aid for teaching farm record keeping can be found in the Farm Accounting Problem and Key.[9] The range of business transactions

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7. Painter, Charles M., Keeping Farm Records for Analysis, Austin Area Vocational Technical Institute, Austin, Minnesota, 1966.

8. _____"Using Farm Analysis Information," Austin Area Vocational Technical Institute, Austin, Minnesota, 1968.

9. Walker, Donald and Edgar Persons, "Farm Accounting Problem and Key", Vocational Agriculture Materials Center, Staples Area Vocational Technical Institute, Staples, Minnesota.

normally found in a farm business are arranged in a way that would permit a student to learn the basics of farm record keeping. The key provides an answer sheet for the accounting problem for either checking student work or for use in other problems such as account closing or business analysis.

Business Analysis:

Step by step instructions for analyzing the farmer's account can be obtained in The Documentation for Farm Business Analysis.[10] This document outlines how each item which appears in the business analysis is calculated. It is the document upon which the computer program for analyzing the account is based.

Evaluation:

Cvancara[11] first explored the financial benefit to farm families enrolled in the management education program. Using a matched pairs technique, he determined that each of the first three years of management instruction added about $500 to the gross earnings of the farm business. His study hinted at, but did not substantiate that there may be a diminishing marginal return effect from subsequent input of management instruction for a farm family.

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10. Persons, Edgar, "Documentation for Farm Business Analysis" 1972 edition. Addendum 1973, Vocational Agriculture Materials Center, Staples Vocational Technical Institute, Staples, Minnesota.

11. Cvancara, Joseph, "Input-Output Relationships among Selected Intellectual Investment in Agriculture", Ph.D. Thesis, University of Minnesota, St. Paul, 1964.

Rolloff[12] in a study of Ohio farmers engaged in management instruction established that farmers learn as well as earn while engaged in management instruction. Rolloff reported a cost-benefit ratio of 1:56 for the families enrolled but failed to account for all of the costs, both opportunity and direct, that were incurred.

An extensive benefit-cost study of 3,518 farms was done by Persons.[13] He demonstrated that the benefit-cost ratio, based upon labor earnings for farmers, was about 4:1. When all community costs were considered, the ratio was still 2:1 based on labor earnings. When business activity in the community was used, the ratio rose to 9:1 not considering the multiplier effect of money generated in the community. A significant finding substantiated the earlier work reported by Cvancara. There was a diminishing marginal return effect beginning with the fourth and continuing through the sixth year of instructional input, but a very rapid rise in earnings associated with subsequent instruction in years seven through ten. Even during the years of declining marginal return, the benefit-cost ratio was well above 1:1.

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12. Rolloff, John, "The Development of a Model Design to Assess Instruction in Terms of Economics Returns and the Understanding of Economics Principles", Ph.D. Dissertation, The Ohio State University, Columbus, 1966.

13 Persons, Edgar, et al, "An Economic Study of the Investment Effects of Education in Agriculture", U.S.O.E. Project OE 427-65, University of Minnesota, St. Paul, 1968.

An alternative approach to the evaluation of the effectiveness of the management program is based on the persistence of enrollees in maintaining class membership. Examination of the records of enrollment held at Agricultural Records Co-Op, Madison, Wisconsin, showed that of the 484 farm cooperators enrolled in the Thief River Falls Farm Management Program in 1971, 480 were again enrolled for the 1972 business analysis year.[14]

Another gross evaluation measure is the speed with which the farm management education program as defined in the previously cited documents has been adopted by other states. States which now have active farm management education programs include: Alaska, Washington, Oregon, Idaho, South Dakota, Nebraska, Iowa, Wisconsin, Connecticut, and North Dakota.[15]

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14. Personal notes obtained from Edgar Persons, Professor of Agricultural Education, University of Minnesota, St. Paul.

15. Palan, Ralph, "Proceedings, National Invitational Conference on Farm Management Education", Faribault Area Vocational Technical Institute, Faribault, Minnesota, 1973.

BACKGROUND OF PROGRAM DEVELOPMENT.

Initial steps toward the implementation of an organized program of Farm Management Education in North Dakota Vocational Agriculture Departments were begun in June of 1969. At that time, as part of a course in Adult Education taught by Professor Shubel D. Owen, Dr. Don Priebe introduced the Farm Management Education concept in several class sessions. This program was also explained in other meetings.

During the winter quarter of 1969-70, Farm Management Education was introduced as a major component of Agricultural Education 401, Adult Programs in Vocational Agriculture. This program has continued as a major emphasis in the course.

In August of 1970, Dr. Edgar Persons of the Agricultural Education staff at the University of Minnesota taught an intensive one week in-service workshop on Farm Management Education at North Dakota State University. This course was offered by the Agricultural Education Department with funding and cooperation from the North Dakota State Board for Vocational Education. The enrollment included fifteen Vocational Agriculture instructors and two graduate students.

In October of 1970, a coordinating committee consisting of Quentin Christman, Allen Dockter, Leslie Gullickson, Leonard Larshus. Marlow Nelson, Virgil VandeWalle, Norbert Mayer and Don Priebe

met in Fargo during the NDEA Convention to make further plans and recommendations for the implementation of Farm Business Management Education in North Dakota. Plans were made to utilize the account books developed at the Area Vocational Technical Institute in Thief River Falls, Minnesota. A supply of record books for North Dakota was obtained and made available through the North Dakota Vocational Agriculture Instructors Association.

In January of 1971, a pilot Farm Management class was started in the Stanley community. This class, taught by Leonard Larshus, served as a model for other North Dakota Farm Management programs in Vocational Agriculture Departments.

Need for Record Analysis System

The need for an organized system of record analysis became apparent as the first local program began to develop. The coordinating committee had recommended the adoption of the analysis system in use in Minnesota. An analysis center to begin processing North Dakota Farm Management Records, to provide technical assistance and to begin planning necessary modifications appeared as a priority need.

In January of 1971 a proposal for a Farm Management Education Record Analysis Systems Research and Development Project was prepared by the staff of the Department of Agricultural Education,

at North Dakota State University. This project was transmitted on February 1, 1971, and was later approved for funding beginning July 1, 1971, by the North Dakota State Board for Vocational Education. 16

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16. Department of Agricultural Education, North Dakota State University, Proposal for Farm Management Education Record Analysis Systems Research and Development to State Board for Vocational Education, February 1, 1971.

PURPOSES AND SPECIFIC OBJECTIVES

The purpose of the Farm Management Education Record Analysis Systems Research and Development Project was to develop a records analysis and interpretation system for Farm Management Education offered as a part of this program of Vocational Education in Agriculture in North Dakota. The subsequent system and resulting data bank would then be used for research and for program or curriculum development.

The specific objectives[17] of the proposed project were:

1. To design and implement an analysis and interpretation system for the records kept during the 1971 Farm Management Education program for adults.
2. To modify on the basis of the 1971 results, the analysis and interpretation systems for use in processing the 1972 records.
3. To provide a central headquarters for the North Dakota Farm Management Education program and to provide technical assistance to teachers conducting local programs.
4. To establish a data bank of information based on the 1971 records and those of subsequent years.
5. To continue this data bank and to make the information available in a form useful to plan and modify curricula.
6. To utilize the data bank for continued research needed for development, modification, and evaluation of the analysis system and the educational program.
7. To examine the use of a variation of Farm Management Education for other agricultural business management needs.

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17. Ibid

DESIGN OF THE PROJECT

The design of this developmental project can best be described by the chronological sequence in which activities were planned. The following list of activities brings into focus the elements of planning, coordinating, implementing and evaluating as described by the project objectives:

Flow Chart of Project Activities

I. Begin inservice education of teachers to generate interest and develop expertise needed to launch initial pilot programs in Farm Business Management Education.

II. Select Farm Business Record book suitable for use with the North Dakota farms; develop promotional brochure.

III. Arrange for and coordinate use of electronic data processing services for record summary and analysis.

IV. Secure services of graduate assistant to coordinate development of project and to assist in modification of analysis program.

V. Continue in-service education of instructors through both group and individual consultation.

VI. Incorporate instructional techniques into pre-service education courses.

VII. Complete summary and analysis of first year records of farm cooperators in pilot schools.

VIII. Through individual and group consultation, develop expertise in local instructional staffs in the techniques of analysis interpretation.

IX. Maintain a data base for use in curriculum development and comparative studies.

X. Conduct in-service training workshop for new prospective teachers.

XI. Make modifications and adaptations of business analysis program to better serve North Dakota farmers.

XII. Summarize business records for second year of pilot study; publish report for distribution to farmer cooperators and to other teachers for use as curriculum resource.

XIII. Examine the feasibility of adaptation of the management education approach to other forms of business enterprise.

XIV. Develop scheme for continued operation and coordination of farm management education.

XV. Prepare and publish final report.

PRE-SERVICE EDUCATION

Pre-service education for those preparing to become teachers of agriculture must proceed in concert with the development of programs in which those teachers will serve. Although the development of pre-service components for the teaching of Farm Management Education was not a part of this funded project, it is reported here because of the important and close interface with project activities and development.

In the winter quarter of 1969-70, a substantial Farm Management Education component was developed and taught in Agricultural Education 401, Adult Education in Agriculture, in the Department of Agricultural Education. In each succeeding winter quarter this course has been offered with an increasing emphasis on the teaching of farm management. As the program has developed within the State, there has been made available an increasingly broad and valuable source of teaching material.

Arrangements are being made with the Department of Agricultural Economics for the offering of a course in Farm Accounts and Analysis to provide additional needed input into the pre-service teacher preparation program.

IN-SERVICE EDUCATION

The in-service education of teachers conducting or planning to conduct Farm Management Education programs is of crucial importance and must proceed in close harmony with the development of such programs. The need for intensive and well planned in-service activities was particularly critical in the case of the Farm Management program and project because:

1. Teachers were generally not acquainted with this program or prepared to teach it at the time the project began.
2. Those more experienced teachers most likely to begin these programs were furtherest removed in time span from preparatory courses.
3. Changes in farm management and the related teaching program are dynamic and rapid, necessitating a vigorous and continued in-service education delivery system.

Such an in-service program has been provided in the following ways:

A series of three intensive one-week Farm Management Education workshops were offered in 1970, 1971, and 1972. While these workshops were not part of the project reported here, they were closely allied with project activities and were funded by the North Dakota State Board for Vocational Education and offered by the Department of Agricultural Education.

The first workshop offered in August of 1970 is described on page 11 of this report. A follow-up workshop was taught in August of 1971 by Mr. Ralph Palan, Farm Management Instructor at Faribault, Minnesota. Fourteen teachers were enrolled including several who had attended the 1970 workshop. In August of 1972, a third intensive workshop was taught by Dr. Persons with 27 enrolled. These workshops helped form a solid basis for the further development of Farm Management Education in North Dakota.

During the research and development project and as an integral part of meeting one of the objectives, "...to provide technical assistance to teachers conducting local programs ", a series of in-service activities were carried out and included:

1) A two-day records close out session was held in Bismarck on December 29 and 30, 1971, for teachers conducting or planning to offer programs in Farm Management Education. Mr. Ed Sisler, Coordinator for Vocational Agriculture from Thief River Falls, Minnesota, worked with Marvin Kleene in coordinating this program.
2) A meeting was held in March of 1972 to explain the use of the computerized depreciation programs.
3) A second records close out session was conducted on December 26, 27 and 28, 1972 in Minot and Bismarck.

4) In March of 1973, two half-day Farm Account Analysis and Interpretation sessions were held in Minot and Bismarck. These workshops, designed to further prepare instructors to teach records analysis interpretation, were taught by Mr. Palan and Dr. Persons.

5) Considerable in-service technical assistance was also provided by the preparation and distribution of teaching aids, visits by the coordinator to schools to assist teachers, and numerous telephone conferences to provide needed assistance.

These in-service education activities have been a continuous and integral part of the development of Farm Management Education in North Dakota.

RESPONSIBILITIES OF PROGRAM COORDINATOR

A Graduate Research Assistant was employed in December, 1970, to coordinate, in cooperation with the Project Director, certain aspects of the development of Farm Management Education in North Dakota. The responsibilities of the position were defined as follows:

I. To supervise the summary and analysis of all farm management education programs located in North Dakota.

II. To provide completed summary and analysis reports for each cooperating farmer submitting his record for analysis as well as summary reports for teachers or agriculture in the State of North Dakota.

III. To develop and disseminate teaching material which will be useful in implementing new programs and improving the effectiveness of established programs of farm management.

IV. To conduct meetings of local teachers for the purpose of interpreting the summary of farm business records.

V. To respond to the requests of Vocational Agriculture teachers for assistance with the procedures of on-farm instruction, including the mechanics of record keeping, analysis and interpretation.

VI. To maintain liaison with program developers in Minnesota and other states with the express purpose of improving the record summary and analysis available to teachers and farmers.

VII. To conduct studies and surveys of management needs to assist in guidance of local programs or initiation of new program thrusts.

DEVELOPMENT OF THE BUSINESS ANALYSIS PROCEDURE

In the initial stages of the project it was decided to use the business analysis scheme developed in Minnesota as a basic tool for summarizing farm business accounts. Since this system was already in widespread use, it seemed more appropriate to adopt the system with hope of modification rather than to expend initial time and resources on duplicating a system much like it for North Dakota.

The analysis system provides a summary of the farm business based upon an accrual accounting of the transactions of the business. It is divided into six basic parts. (See addenda 1 and 2 as illustrations.) A brief description of the parts follows:

I. Resources Available (Table 1)

Capital investment in each segment of the business is reported as well as the physical quantities of land and labor that were used in the year's business. The summary of resources reports all resources used regardless of ownership.

II. Income and Expenses (Table 2a, 2b, 6a, 6b.)

All cash income and expenses for the business, regardless of ownership, including some non-cash income and non-cash expenses are reported for the whole farm in Tables 2a and 2b. The same items are reported in Tables 6a and 6b except that the landlord's share of both income and expense are omitted and certain expenses peculiar to the operator are included.

III. An Accrual Accounting by Enterprise (Table 3)

Here income and expense for an enterprise are combined to produce a return or cost figure that reflects the contribution of the enterprise (Beef cows, for example) to the total income and expense of the business.

IV. Net Worth Statement and Significant Financial Ratios (Table 5)

As the name implies, this data set enumerates the asset and liability status of the business at the beginning and close of the year. In addition, some ratios are reported which provide guidelines about the security of the financial position of the operator.

V. Management and Efficiency Factors (Table 8)

The purpose of this table is to get a birdseye view of the health of the business and to provide some clues as to where the business may be improved to better meet the goals of the operation.

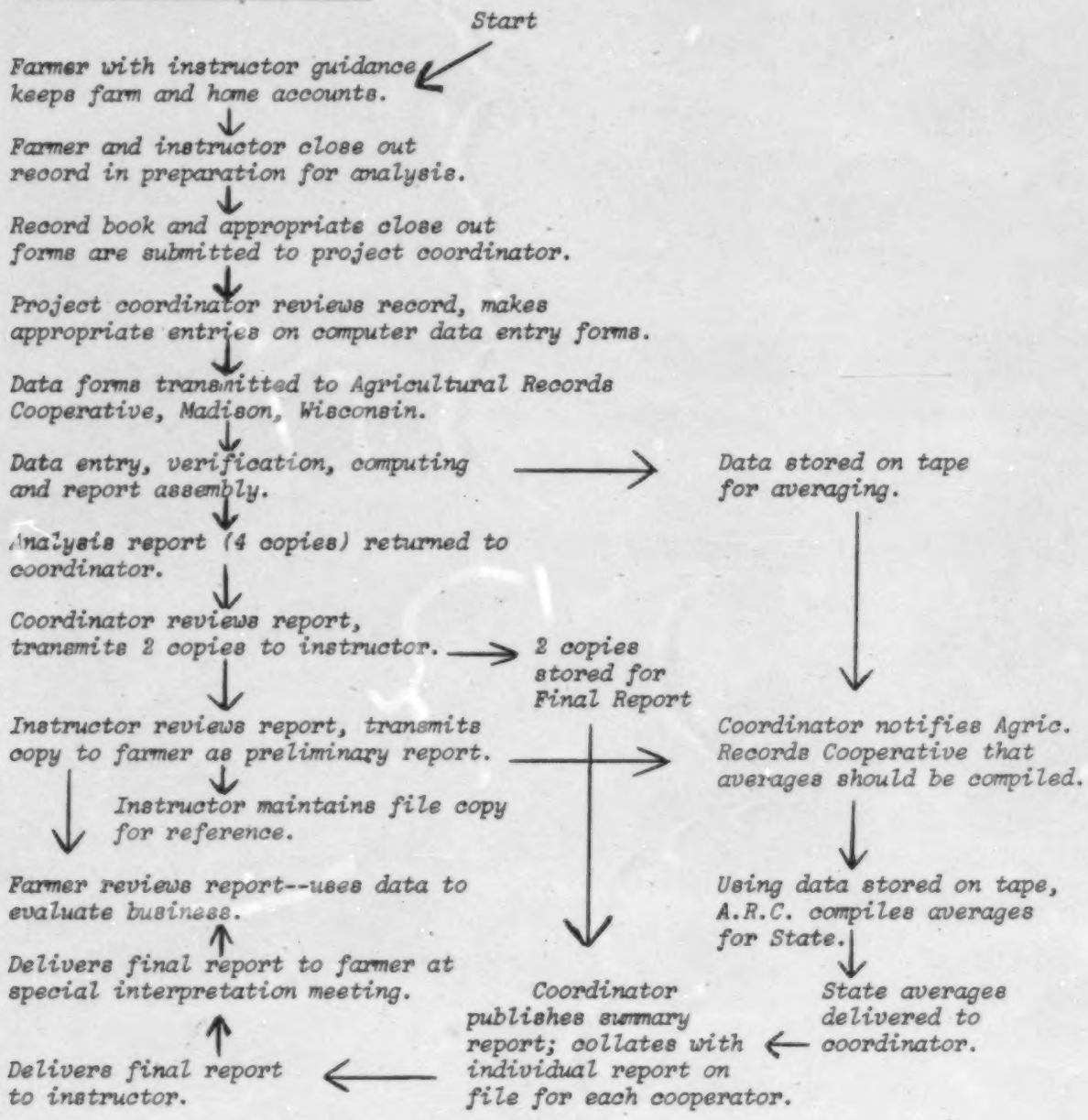
VI. Enterprise Tables (Table 9 - 18b)

Each crop and livestock species is presented in a separate enterprise table which provides data on the profitability of the enterprise and upon the identifiable management factors that may contribute to the success or failure of the enterprise.

To arrive at a business analysis for a farm cooperator, it is necessary for a set procedure to be followed in handling the individual farm data. An important element in the data handling process is to protect the confidentiality of the material. Thus, all farm record data is carefully guarded to insure that only those who need to know to complete the analysis have access to the data.

The flow chart which follows outlines the process the record goes through from the initial data entry on the farm to the final publication of the summary report.

Record Analysis Flow Chart


Start
Farmer with instructor guidance keeps farm and home accounts.
Farmer and instructor close out record in preparation for analysis.
Record book and appropriate close out forms are submitted to project coordinator.
Project coordinator reviews record, makes appropriate entries on computer data entry forms.
Data forms transmitted to Agricultural Records Cooperative, Madison, Wisconsin.
Data entry, verification, computing and report assembly.
Data stored on tape for averaging.
Analysis report (4 copies) returned to coordinator.
Coordinator reviews report, transmits 2 copies to instructor.
2 copies stored for Final Report
Instructor reviews report, transmits copy to farmer as preliminary report.
Coordinator notifies Agric. Records Cooperative that averages should be compiled.
Instructor maintains file copy for reference.
Farmer reviews report--uses data to evaluate business.
Using data stored on tape, A.R.C. compiles averages for State.
Delivers final report to farmer at special interpretation meeting.
State averages delivered to coordinator.
Coordinator publishes summary report; collates with individual report on file for each cooperator.
Delivers final report to instructor.

As illustrated in the flow chart, the coordinator plays a very vital role in the completion of the analysis report for the teacher and farmer. In addition to these duties, as he maintains liaison with the developers, he works to develop the modifications of the program that are most crucial to the successful use of the analysis in the Farm Management Education program.

MODIFICATIONS IN THE BUSINESS ANALYSIS PROCEDURE

Several modifications in the master analysis program have resulted from either the direct or indirect influence of the North Dakota farm management education program. These modifications are listed below.

I. Expansion of the selection of crops.

Some field crops commonly grown in North Dakota were not included in the initial list of crops for which individual enterprise data could be obtained. In concert with representatives from other states, the original list of 26 crops was expanded to over 900 crops to permit the individual identification of practically every economic crop in North Dakota.

II. Treatment of pasture as a separate crop enterprise.

While the original crop analysis plan treated pasture as a separate crop, there was no mechanism to record income or expenses against pasture. The 1972 revision permitted the treatment of pasture as an economic crop and further modification in 1973 permitted the selection of many different kinds of pasture as separate and distinct enterprises.

III. Allocation of costs to livestock enterprises.

The project coordinator helped to develop and document the allocation of farm power and machinery, livestock equipment and building expense to the various livestock enterprises.

IV. Adoption of color coding for final report.

For easy reference the final report was produced in coded colors to permit farmers and instructors to locate and study specific items with greater ease.

V. Adding Per cent Calf Crop - Beef Breeding.

Although the printout format had a slot provided for the per cent calf crop, the mechanism for calculating this item had not been completed. With the assistance of the program developers a procedure was devised to record the needed data on the input sheets and to perform the necessary calculations by computer.

VI. Allowance for other Crop Income.

The enterprise table for crops was not designed to allow the inclusion of non-product crop return. Thus, items such as ASC payments, insurance proceeds, and sale of straw were not not normally credited to the crop enterprise from which such income was derived. A 1973 modification of the program included a line on table 10 for hand input of the non-product crop income, while the subsequent 1973 revision incorporated the idea into the basic table.

A major development effort was aimed at adopting a computerized depreciation schedule to provide for continuous recording of capital asset information. Although the computerized schedule had been used in Minnesota for three years, North Dakota was the first other

state to adopt its use with the analysis program. About 75 per cent of the cooperators have used the computerized schedule. While this single event may appear to have little significance, it does indeed contribute to the organization and operation of the management program. Since the majority of instructors in the Farm Management Education program have responsibilities for high school students as well, it is important that available alternatives to some record keeping books be examined. The use of the computerized schedule not only reduces the time required to close an account book for analysis, but improves the accuracy of the depreciation record and reduces the coordinator time required to transmit an account for analysis.

REVIEW OF MAJOR PROJECT ACTIVITIES

Many of the important accomplishments are reported in the section on develcpment and modifications of the business analysis procedures. A very significant amount of project effort was expended on in-service education and technical assistance through workshops, visits to schools, telephone calls, and the production and dissemination of teaching aids. These efforts were continuous in nature and are included in more detail in the report section concerned with in-service education.

Other major activities which outline the progress in a chronological sequence are reported in this section of the report.

Promotional Activities

At the beginning of the project period (July 1, 1971) a qualified Graduate Research Assistant had not been secured. This search was continued throughout the summer and fall of 1971. During the fall of 1971, Dr. Don Priebe, Project Director, conducted several informational meetings to acquaint Vocational Agriculture Instructors, School Administrators, School Board Members, State Staff members, Advisory Council members, and others with the Farm Management Program. Meetings were held in Bismarck, Washburn, Stanley, Tioga, Bottineau, Rugby, and Maddock.

Other promotional meetings were held during the course of the project and in June of 1972 a Farm Management Education brochure was developed and printed. This was made available in quantity to schools as a means of presenting Farm Management Education and as an aid in developing or expanding programs.

Record Processing and Analysis

On December 1, 1971, Marvin Kleene was appointed as Graduate Research Assistant and began his graduate studies and his duties on the Farm Management Education project. Record summary and analysis was begun in January when account books from Stanley and one record from the Wyndmere community were received and reviewed for accuracy and completeness. On January 26 and 27, Marvin Kleene visited the analysis center at Thief River Falls, Minnesota, to review the record processing system in use at that analysis center and to confer with Mr. Sisler, Area Coordinator, concerning methods of processing the North Dakota Farm Management account books. Valuable assistance was received from Mr. Sisler and the staff at the Thief River Falls Area Vocational Technical Institute. At this time, some account books were returned to instructors for needed corrections or additional information.

In February of 1972, the corrected account books were received in the Department of Agricultural Education, data were transferred to computer sheets, and these were submitted to the

Agricultural Records Cooperative at Madison, Wisconsin, for analysis. On March 15, 1972, the completed analysis reports were received and two copies of each were forwarded to schools with each cooperator receiving a copy of his record analysis.

During April of 1972, the 1971 State Report of Record Analysis was summarized, written, printed and distributed. (See Addendum #1) The copies provided to farmers enrolled in local areas contained their report tables in addition to the average tables. This individual information was kept confidential and reported only to the farmer concerned.

Copies of the analysis report were made available to the State Board for Vocational Education staff, Vocational Agriculture teachers interested in starting Farm Management Education programs, and other interested persons. Copies of this report were also retained for classroom use in pre-service and in-service education courses.

Late in May the Analysis Report was reviewed by project staff assisted by Dr. Persons. This meeting was held to review progress and to identify modifications which should be made in the record analysis system. In June, a similar meeting was held to review the project and the progress of establishment of Farm Management Education programs in public schools in NorthDakota.

During 1972 several new Farm Management Education programs were started in North Dakota. As of June, 1972, the following schools were conducting Farm Management Education programs:

School	No. of Cooperators	No. Using Computerized Depreciation
Bismarck *	6	6
New Salem	7	1
Stanley	7	-
Tioga	4	3
Wahpeton **	28	28
Washburn **	2	-

** Veteran's Agriculture Program including Farm Management

* Post-secondary Farm Management Program.

In July of 1972, an Annual Report covering project activities to that date was prepared and submitted to Research Coordinating Unit of the North Dakota State Board for Vocational Education.

On December 14 and 15, 1972, the Research Assistant attended a Coordinators Meeting with representatives of the Agricultural Records Cooperative. This meeting, held in St. Paul, Minnesota, was for the purpose of coordinating the processing of the 1972 accounts in early 1973 and to examine problems and possible changes.

Account books covering the 1972 calendar year were received for analysis beginning on January 4, 1973. The process of checking, verification, determining totals, and transferring data to computer input sheets continued until February 26, 1973. During this time computer input sheets were submitted at intervals to the Agricultural Records Cooperative at Madison, Wisconsin, and as the returned analyses were received, the preliminary copies were sent to the schools.

During April 1973, the averages for 39 North Dakota Farm Management cooperators were published in the 1972 State Analysis Report. (See Addendum #2) The copy provided to each individual farmer also included copies of his tables inserted facing the table containing the area averages for the same items. Reports were made available to each instructor and each cooperating farmer as well as to the North Dakota State Board for Vocational Education staff and others. Copies were also retained for use in pre-service and in-service education courses.

In June of 1973, Marvin Kleene, Graduate Research Associate, and Leslie Gullickson, who assumed statewide Coordinator responsibilities for Farm Management Education on July 1, 1973, attended the National Invitational Farm Management Education Conference in Faribault, Minnesota. The purpose of their attendance was to help review and expand the analysis program, as well as to exchange teaching information and ideas.

The Graduate Research Associate assignment was completed in August and in November, the Project Director conferred with Dr. Edgar Persons concerning project completion, reporting, and evaluation.

North Dakota Implement Dealership Manager Study

During the first half of 1973, a study was conducted as part of the project to begin examining possibilities of adapting this

type of management education to non-farm agribusiness managers. This study concerning "Attitudes of North Dakota Implement Dealership Managers Towards a Continuing Management Education Program" (see Addendum #3) was conducted by Marvin Kleene, Graduate Research Associate, with the assistance of the Project Director and the cooperation of the North Dakota Implement Dealers Association.

A questionnaire was mailed to the 359 North Dakota implement dealership managers located as of January 22, 1973. Usable replies were received from 188 managers. The results of the study provided definite indications of interest in management education. Detailed results are available in the study report.[18]

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18. Kleene, Marvin, Report of the Research Study, "Attitudes of North Dakota Implement Dealership Managers Towards a Continuing Management Education Program," conducted as part of the Farm Management Education Record Analysis Systems and Development Project in cooperation with North Dakota State Board for Vocational Education Research Coordinating Unit. Department of Agricultural Education, North Dakota State University, Fargo.

DISSEMINATION

Dissemination efforts have included the 1971 and 1972 State Record Analysis Reports and the report of the "Attitudes of North Dakota Implement Dealership Managers Towards a Continuing Management Education Program" study, as well as this Final Report. Copies of each were or are being made available to North Dakota Vocational Agriculture Instructors, North Dakota State Board for Vocational Education staff, Research Coordinating Unit Directors and others who may be interested. Procedures and results concerning the project have also been made available periodically in local meetings and in response to requests. During the Central States Research Seminar held in Southern Illinois University in Carbondale, Illinois, July 30 to August 2, 1973, Don Priebe, Project Director, reported on the development of Farm Management Education in North Dakota.

PLANS FOR PROGRAM CONTINUATION

During the duration of the research and development project the coordination and analysis center was maintained in the Agricultural Education Department at North Dakota State University. In the early spring of 1973, plans were drafted for the establishment of an analysis center on a continuing program basis rather than on a project basis.

A decision was made to establish the analysis center at Bismarck Junior College. This was believed to be an appropriate location because of the geographic location relative to local programs, proximity to the Office of the State Supervisor of Vocational Agriculture and the continuing development of post-secondary and adult programs in Farm Management Education at Bismarck Junior College.

This center was established cooperatively between Bismarck Junior College and the North Dakota State Board for Vocational Education on July 1, 1973, and at that time Leslie Gullickson was appointed as Coordinator on a half-time basis with teaching duties comprising the balance of his assignment.

Since July 1, the Coordinator has begun the establishment of the Analysis Center and provided technical assistance to teachers and has worked to promote the development of Farm Management Education programs in North Dakota schools.

CURRENT STATUS OF PROGRAM

Programs and Enrollment

On November 3, 1973, the following schools were reported[19] conducting Farm Management Education Programs, either as part of a Veteran's Agriculture program, Post-Secondary Production Agriculture course, or an Adult Farm Management class:

School	Number
Bismarck, Post-Secondary Farm Management	14
Berthold, Adult Farm Management	3
Bottineau, Veteran's Farm Management	26
Devils Lake, Veteran's Farm Management	32
New Salem, Adult Farm Management	5
Rugby, Veteran's Farm Management	5
Stanley, Adult Farm Management	7
Wahpeton, Veteran's Farm Management	32
Washburn, Adult Farm Management	3
	127

Record Analysis

The Coordinator estimates that records for nearly 100 cooperators will be analyzed for the calendar year 1973. These reports are scheduled to be available by March of 1974.

Projections for 1974

Estimates for 1974 enrollment indicate a very substantial and rapid expansion in programs of which Farm Management Education is a part. Much of this expansion is planned in Veteran's Agriculture programs.

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19. Letter from Les Gullickson, November 3, 1973.

SUMMARY AND RECOMMENDATIONS

Summary

1. Farm Management Education programs have been established in nine schools with an approximate enrollment of 127 farmers during the 1973 calendar year.
2. Projections based on plans for 1974 indicate a substantial expansion of Farm Management Education Programs in North Dakota.
3. A record analysis system was adopted and modified to fit North Dakota conditions.
4. A central data analysis center was maintained for the 1971 and 1972 years.
5. A continuing analysis center with a Coordinator has been established at Bismarck Junior College.
6. Technical assistance has been and will continue to be provided to teachers of Farm Management Education programs.
7. Pre-service and in-service education for teaching in Farm Management Education programs were provided during the project. In-service activities will continue to be scheduled as needed and plans have been proposed to further strengthen the pre-service programs with an additional course in Farm Records and Analysis.
8. A data bank has been established and plans to continue needed research in Farm Management Education are being proposed.

9. A beginning has been made in examining the adaptation of similar management education programs to non-farm agribusiness managers. The study findings indicate considerable interest in management education as expressed by North Dakota farm implement dealership managers.

10. Much valuable assistance and cooperation was in evidence during the project. Cooperating agencies included: Department of Agricultural Economics and the Communications Office, North Dakota State University; North Dakota State Board for Vocational Education and State Staff; Thief River Falls Area Vocational Technical Institute; University of Minnesota Agricultural Education staff and many others.

Evaluation

Farm Management Education programs have been established in nine North Dakota communities. A record analysis system has been adopted and modified for use in North Dakota. Pre-service and in-service programs were established and provisions were made to provide technical assistance to teachers.

The stated objectives of the Farm Management Education Records Analysis System Research and Development Project have been substantially achieved and provisions have been made for program operation on a continuing basis.

Recommendations

1. Research concerning record analysis and interpretation, teaching methods, curriculum development and program design should be continued with concurrent maintenance of the data bank.

2. Establishment in schools of additional full-time positions for teachers of Farm Management Education programs is needed for sound and continued program development.

3. The position of Coordinator for Farm Management Education should soon be designated as a full-time position to provide for operation of an expanded analysis program and increased need for technical assistance.

LIST OF ADDENDA

Addendum 1 North Dakota Vocational Agriculture Farm Business Management Education Program. 1971 Annual Report. Agricultural Education Department, North Dakota State University in cooperation with North Dakota State Board for Vocational Education. May 1972.

Addendum 2 North Dakota Vocational Agriculture Farm Business Management Education Program. 1972 Annual Report. Agricultural Education Department, North Dakota State University in cooperation with North Dakota State Board for Vocational Education. April 1973.

Addendum 3. Report of the Research Study "Attitudes of North Dakota Implement Dealership Managers Towards a Continuing Management Education Program." Marvin Kleene, Graduate Research Assistant,and Dr. Donald W. Priebe, Project Director, Agricultural Education Department, North Dakota State University and North Dakota State Board for Vocational Education Research Coordinating Unit. November 1973.

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